

ABSTRACT

A system for metering and dispensing single and plural component liquids and solids as described herein. The dispensing system has a microprocessor-based control system and progressive cavity pumps which provide a very accurate control of component ratios, shot sizes, flow rates and dispense durations. The system has numerous feedback components for accurately controlling the pressure, flow rates, fluid levels and amounts of fluids dispensed.

Where a valved nozzle is used, the pressure in the flow system is used to control the pumps rather than the valve. Such a system may be used as a sprayer with compressed air added. Drum rams are associated with the supply drums and the progressive cavity pumps may be placed on the drum ram. Maintenance of a steady state in the system is accomplished with back and forth movement of the pump, with compensation for pressure changes. Absolute rotational position of the pump can be monitored when a set pressure is maintained, to diagnose system conditions. A high flow system uses ball valves and a releasably coupled manifold. A mold charging system uses pressure to control the pumps which are cycled on and off to avoid overpressurizing the mold. The rate of pressure increase is used to control the rate of flow from the pumps as the mold approaches completion of the charge, again to avoid overpressurizing the mold. A signal controlled by a timer can indicate elapsed time as a warning that material within the mixer conduit is hardening to a condition such that flow cannot be reinitiated.